Residency Program
Master of Surgery (MS)
Curriculum (Phase-B)

Cardiovascular and Thoracic Surgery

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Dhaka, Bangladesh

Contents

1. Introduction:

Overview of the Specialty:

Cardiovascular and Thoracic Surgery is a super specialized subject of General Surgery. This subject deals with the Cardiac, Vascular and Thoracic diseases of local community of Bangladesh. It has three broad wings- one is Cardiac Surgery which deals with the adult cardiac diseases, congenital cyanotic or acyanotic heart diseases and another one is Vascular Surgery which deals with the patients having vascular diseases due to atherosclerosis, vasculitis, thromboembolism etc. And the third one is Thoracic surgery which deals with the diseases of lungs, pleura, oesophagus, diaphragm etc. Cardiovascular and Thoracic Surgery department generally works as a hospital based speciality and needs to integrate their work with other sub speciality like cardiology, anaesthesiology, endocrinology, internal medicine, nephrology and various other departments. This subject needs high practical skill and knowledge and expertise in every aspect.

2. Programme Overview:

Residents will undertake three years intensive Phase-B training after completion of Phase-A training in order to achieve the level of knowledge, skills and expertise required for clinical practice in the field of cardiovascular and thoracic surgery. The knowledge and skills acquired during Phase-A training are further focused and refined during Phase-B training which is three years speciality specific training in cardiac, vascular and thoracic surgery departments of various institutes. This whole period will be divided into various blocks each consisting of 6 (Six) months. General rules of the University will be applicable for all the cabdidates.

3. Objectives:

1. To prepare cardiovascular and thoracic surgeons who are able to meet and respond to the changing healthcare needs and expectations of the society.
2. To develop cardiovascular and thoracic surgeons who posses knowledge, skills and attitudes that will ensure that they are competent enough to practice safely and effectively.
3. Utilizing diagnostic and therapeutic modalities in the most cost effective manner.
4. To help them to develop critical problem solving attitude and approach when they serve in the community.
5. Understand the usefulness and limitations of diagnostic and therapeutic modalities.

4. Admission Requirements:

Residents of Cardiovascular and Thoracic Surgery who have successfully passed Phase-A final examination are eligible for enrolment in Phase-B program.

Content (Syllabus) Outline
CARDIAC SURGERY

1. Special Diagnostic and Therapeutic Procedures in Cardiac Surgery
2. Gencral Preoperative Considerations and Preparation of the patient for Cardiac Surgery
3. Risk Assessment in Cardiac Surgery
4. Intraoperative Considerations in Cardiac Surgery
5. Admission to the ICU and Monitoring techniques
6. Mediastinal bleeding
7. Respiratory management
8. Cardiovascular management
9. Fluid Management, Renal and Metabolic Problems
10. Post-ICU Care and Other Complications
11. Use of antibiotic in Cardiovascular Surgery
12. Anesthesia in cardiovascular surgery, Shock and Circulatory Collapse
13. Thoracic Incisions
14. Postoperative Care in Cardiac Surgery
15. Tracheal Intubation and Assisted Ventilation
16. Cardiopulmonary Resuscitation
17. Computer Applications in Cardiovascular Surgery
18. Cardiopulmonary Bypass for Cardiac Surgery
19. The Aorta, the Pericardium
20. Atrial Septal Defects, Atrioventricular Canal Defects and Total Anomalous Pulmonary Venous Return
21. Major Anomalies of Pulmonary and Thoracic Systemic Veins
22. Surgical Treatment of Ventricular Septal Defect

23. Tetralogy of Fallot and Pulmonary Atresia or Stenosis with Intact Ventricular Septum
24. Truncus Arteriosus
25. Congenital Aortic Stenosis
26. Congenital malformation of Mitral Valve
27. Transposition of the Great Arteries
28. Pulmonary Atresia with Intact Ventricular Septum
29. Univentricular Heart, Tricuspid Atresia, Ebstein's Anomaly, Hypoplastic Left Heart Syndrome
30. Acquired Disease of the Tricuspid Valve
31. Acquired Disease of the Mitral Valve
32. Complication from Cardiac Prosthesis
33. Acquired Aortic Valve Disease
34. Cardiac Pacemakers and Implantable Cardioverter-Defibrilators
35. The Coronary Circulation and coronary artery disease, Bypass grafting , Left ventricular Aneurysm, Post infarction Ventricular Septal Defect
36. Dietary and Pharmacologic Management of Atherosclerosis
37. The Surgical Management of Cardiac Arrhythmias
38. Tumors of the heart
39. Transplantation
40. The Artificial Heart
41. Thoracoscopic Surgery

VASCULAR SURGERY

1. Basic Concepts
   a) Arterial Disease
   b) Venous Disease

2. Initial Patient Evaluation
   a) Examination of the Arterial System
   b) Examination of the Venous System
   c) Noninvasive Vascular Testing
   d) Vascular Radiology
   e) Preoperative Preparation
3. Perioperative Management
   a) Anaesthesia
   b) Vascular Monitor
   c) Early Postoperative Care
4. Specific Arterial Problems
   a) Cerebrovascular Disease
   b) Lower-Extremity Claudication
   c) Threatened Limb Loss
   d) Foot Care
   e) Amputations
   f) Aneurysms
   g) Reno vascular Hypertension
   h) Intestinal Ischaemia
   i) Upper-Extremity Arterial Disease and Vasospastic Disorders
5. Specific Venous Problems
   a) Varicose Veins
   b) Venous Thromboembolism
   c) Postphlebitic Syndrome and Chronic Venous Insufficiency
6. Miscellaneous Problems
   a) Haemodialysis Access
   b) Vascular trauma

THORACIC SURGERY

1. Radiologic imaging of thoracic abnormalities
2. Pre-operative evaluation of patients undergoing thoracic surgery
3. Perioperative care of the thoracic surgical patient
4. Endoscopic diagnosis and therapy of thoracic disease
5. Thoracic trauma
6. Tracheal lesion
7. Congenital lung disease
8. Benign lesions of the lung
9. Interstitial lung diseases
10. Infections of the lung
11. Lung transplantation
12. Lung cancer screening, workup, staging, treatment
13. Lung cancer surgical strategies for tumour invading the chest wall.
14. Anterior approach to superior sulcus lesions
15. Other primary tumours of the lung
16. Secondary lung tumours
17. Congenital chest wall deformities
18. Chest wall tumours
19. Thoracic outlet syndrome and dorsal sympathectomy
20. Spontaneous pneumothorax, Emphysema, Chylothorax, Malignant Pleural and Pericardial Effusion
21. Pleural tumours
22. Surgery of the diaphragm - A deductive approach
23. Congenital diaphragmatic hernia
24. Surgery for congenital lesions of the esophagus
25. Surgical treatment of benign esophageal diseases

26. Staging techniques for carcinoma of the esophagus
27. Esophageal resection and replacement, neo-adjuvent and adjuvant therapy for esophageal cancer
28. Mediastinal anatomy and Mediastinoscopy
29. Anterior, middle and posterior mediastinal masses
30. Surgical treatment of hyperhidrosis
31. The use of genetic science in thoracic disease

5. Teaching and Learning Methods:

- Case-based , small group interactive discussions
- Problem oriented case-based teaching
- Problem oriented reading
- Self directed learning
- The residents will expand their knowledge in cannulation techniques, cardioplegia, Thoracotomy, congenital heart surgery, emergency management in ICU settings like intubation, extubation, cardiac arrest, CPR, arrhythmia etc.
- Cardiac post-operative discussion, case presentation, Journal presentation, death discussion and seminar, symposium to upgrade their knowledge.

6. Record of Training:

The evidence required to confirm progress through training includes-

- Details of the training rotations, the training plan agreed with weekly timetables and duty rosters and numbers of practical procedures with outcomes.
- Confirmation of attendance at events in the educational programme at departmental and interdepartmental meetings and other educational events.

- A properly completed logbook with entries capable of testifying to the training objectives which have been attained and the standard of performance achieved.
- CME activity
- Supervisor's report on observed performance (in the workplace) of duties, practical procedures, presentations made and teaching activities.
- EBR (End Block Report)

Log book:

Residents are required to maintain a logbook in which entries of academic/professional work done during the period of training should be made on a daily basis and signed by the supervisor. Completed and duely certified logbook will form a part of the application for appearing in Phase-B Final examination.

7. Research:

Development of research competencies is an important component of the residency programme curriculum as they are an essential set of skills for effective clinical practice. Undertaking research helps to develop critical thinking and the ability to review medical literature. Every resident shall carry out work on an assigned research project under the guidance of a recognized supervisor. The project shall be written and submitted in the form of a Thesis. Thesis protocol should be submitted to Institutional Review Board (IRB) within the first 6 months and total thesis should be completed within 27 months out of 36 months.

8. Assessment:

Assessment will be done in two broad compartments:

Compartment A: Consist of four components.

1. Written examination consisting of 2 papers
2. Clinical examination (one long and four short cases)
3. SCA (10 stations)
4. Oral (Two board consisting of 4 examiners)

Every resident must pass all the three components of compartment A separately. Candidates will be declared failed if he/she fails in one or more components of the compartment. He/she then have to appear all the three components in the next phase final examination.

Compartment B: Thesis and Thesis defence.

Written examination:

Two Papers: Paper I - Cardiac surgery
Paper II - Vascular and Thoracic Surgery
Paper III - Applied surgery of Cardiac, Vascular and Thoracic diseases

Question type and marks:

- Three papers (Paper I, Paper II and Paper III); 100 marks each; Time 3 hrs for each paper. Pass marks-60% of total of three papers.
- Each paper will consist of two groups:
  Group A:
  - 10 short questions (5 marks each)
  - These will assess the knowledge of different level and its application
  Group B:
  - 5 scenario based problem solving questions (10 marks for each).

- The questions should focus to assess the capability of handling clinical problem independently and comprehensively as a specialist.
- Suggested format:
  - A scenario followed by question(s).
  - Questions may include diagnosis, differential diagnosis, investigation plan, treatment, follow up and patient education.

Clinical examination: Long case and Short case-

There will be one long case and four short cases.

1) Long case: Marks-100

- Directly observed
- Two examiners for each examinee.
- History taking and examination by examinee 20 mins.
- Discussion on the case 20 mins. (Presentation 6 mins, Crossing 6×2 mins and Decision 2 mins)
- Examiners will neither ask any question nor stop the examinee in any way during history taking and physical examinations.
- Discussion should be done preferably as per structured format and proper weightage on different segments of clinical skills.

Short cases: Marks-100

- Four in number
- Time 20-30 mins
- Crossing should be done with proper weightage on different segments of clinical skills.

Pass marks: 60% of total of long and short cases.

Structured Clinical Assessment (SCA): Marks-100; Pass marks- 60%

- 10 stations: 5 mins each

Oral examination: marks-100; Pass marks-60%

- Two boards consisting of 4 examiners.
- 20 mins each.

Thesis Evaluation:

- Marks: Thesis writing-200; Thesis Defence-100; marks for acceptance-60% of total.
  - To be evaluated by 4 (four) evaluators- 3 subject specialist and one academician preferably involve in research and teaching research methodology.
- Among the subject specialist one should be external.
- Evaluators should be in the rank of Professor/Associate Professor.
- Supervisor will attend the defence as an observer and may interact only when requested by the evaluators.
- Thesis must be submitted to the controller of examination not later than 30 months of enrolment in Phase-B.
- Thesis must be sent to the evaluators 2 (Two) weeks prior to assessment date.
- Evaluation will cover Thesis writing and its defence.
- For thesis writing evaluator will mark on its structure, content, flow, scientific value, cohesion etc.
- For defence- candidate is expected to defend, justify and relate the work and its findings.
- Assessment must be completed in next 3 months.
- Outcome of the assessment shall be in 4 categories- "Accepted", "Accepted with minor correction", "Accepted with major correction" and "Not Accepted".

Residents must submit and appear Thesis defence at notified date and time. However, non-acceptance of the Thesis does not bar the resident in appearing the written, clinical and oral exam.

Qualifying for MS Degree:

On passing both the compartments, the candidate will be conferred the degree of MS in the respective discipline. If any candidate fails in one compartment he/she will appear in that compartment only in the subsequent Phase-B exam.

After successful completion of Phase-B examination he/she has to go through 1 (One) year full time residential training to be declared as a Cardiovascular and Thoracic Surgery Specialist.

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